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Practical botany.

A FOURTH EDITION of Professor Strasburger's² well-known *Das kleine botanische Practicum* has just appeared and, like the previous editions, it is remarkable for the judicious manner in which the presentation of fundamental subject-matter is flavored with modern research. As before, there are thirty-two chapters, and the general method of presentation, which has proved successful, has been retained, so that a glance at the table of contents might lead one to imagine that little change has been made. An examination of the exercises, however, shows that the entire work has been carefully revised, that examples have been changed, and that every effort has been made to bring the book up to the present standpoint of botanical science. The number of forms studied has been somewhat reduced, on the ground that it is better to study a smaller number of forms thoroughly than a larger number superficially. A few of the improvements to which special attention might be called are as follows: a study of sensitive hairs and papillae, a study of double fertilization, a more extended study of protoplasmic connections with the latest methods of demonstrating them, and a particularly thorough revision of the chapters on bacteria and on cell and nuclear division. A large number of new figures has been added.

It may not be out of place in this connection to call attention to a book³ which might be mistaken by the general student for an English translation of Professor Strasburger's work. In the first edition of the translation the translator added some notes of his own and also some additional illustrations, but all such matter was clearly indicated by brackets. In the second edition many of the brackets were eliminated, and in the last edition all brackets have been removed and the translator's notes incorporated into the text, so that it is difficult, and, for one who really needs a translation, impossible to distinguish what rests upon Strasburger's authority from that which has been inserted by the translator. Several figures have also been substituted. This is, to say the least, unfortunate, since in all of the German editions stress has been laid upon the fact that Professor Strasburger has drawn all the figures, and that all statements, even when they concern matters of common knowledge, rest upon his own investigations. Some of the statements, *e. g.*, referring to *Cladophora* as non-cellular, are directly contrary to Professor

²STRASBURGER, E., *Das kleine botanische Practicum für Anfänger. Anleitung zum Selbststudium der mikroskopischen Botanik und Einführung in die mikroskopischen Technik. Vierte umgearbeitete Auflage.* 8vo, viii+251, with 128 figures. Jena: Gustav Fischer. 1902. *M* 6.

³*Handbook of Practical Botany* for the laboratory and the private student, by Dr. E. Strasburger. Translated and edited from the German with many additional notes by W. Hillhouse. 5th ed., rewritten and enlarged. 8vo. xxxii+519. London: Swan Sonnenschein & Co. 1900.

Strasburger's published views. The addition of subject-matter more suited to a text-book is also to be criticised, since it makes the work too long for a manual, without being full enough for a text. These liberties seem hardly justified by the translator's remark in the preface that "the curious in such matters can doubtless disinter them (the translator's additions) by a comparison of the first English edition (in which all such additions were in square brackets), and of the German third edition, with the present issue."

While the fact that the translation has reached a fifth edition indicates that there is a demand for Professor Strasburger's *Practicum* in English, we believe it would have been better to have presented simply a translation, with an appendix indicating English and American types which could be substituted for the German forms when the latter are inaccessible.—CHARLES J. CHAMBERLAIN.

Engler and Prude's "Vegetation der Erde."

THREE MORE VOLUMES of this most important series have appeared lately, making five volumes already issued.⁴ The recent treatises are on the Caucasus region by Radde, on the Illyrian countries by Beck, and on the North German heath by Graebner. Radde's work⁵ alone will be considered here, but early attention to the others may be expected. In the historical account one is surprised to see the immense number of botanists who have worked in the Caucasian region of Europe and Asia; one of the first was Tournefort in 1717, another was the Russian botanist Gölénstädt in 1787. More recently Ledebour, C. A. Meyer, Ruprecht, Trautvetter, Albow, Krassnow, and a host of others have made this region well known botanically. Radde himself has written a large number of botanical papers relating to Caucasia, having worked there since 1854.

The first chapter deals with the steppes, which are found in their perfection north of the Caucasus mountains. As elsewhere, the steppes of Caucasia are of very recent geological origin; the famous "black earth" is the characteristic soil. A large portion of the steppe region has been artificially deforested. As in America, grassy steppes pass gradually into *Artemisia* half-deserts, or into thickets like our chaparral (*Paliurus maqui*). Along the streams poplars and willows occur as on our prairies. Sand dunes and halophytic areas are present in some places, the latter especially near the Caspian sea. Where *artemisia*s now occur, halophytes were once present; before them was the sea, and still further back fresh water lakes. Thus the

⁴ BOT. GAZ. 26: 356. 1898.

⁵ RADDE, DR. GUSTAV, Grundzüge der Pflanzenverbreitung in den Kaukasusländern von der unteren Wolga über den Manytsch-Scheider bis zur Scheitelfläche Hocharmeniens. 8vo, pp. xii + 500, with 13 text figures, 7 heliogravures, and 3 maps. Leipzig: W. Engelmann. 1899.